

CLAIMS:

1. An optical head for use in scanning a record carrier, the record carrier having data stored on data tracks therein on a plurality of information layers at a plurality of depths within the record carrier, wherein the optical head comprises:
 - a movable optical element (16) arranged in an optical path to act upon a first radiation beam (12) and a second radiation beam (14) to provide the beams with a different displacement perpendicular to the optical path; and
 - a lens system for focusing said first beam (12) at a first focal point (A) on a first information layer (3) of the record carrier and the focusing of the second beam (14) at a second different focal point (B) on a second information layer (4),
 - wherein a spacing, transverse to the data tracks, between said first and second focal points (A, B) is controllable by varying the configuration of the movable optical element (16).
2. An optical head according to claim 1, wherein the head is adapted to scan different information layers (3, 4) of the record carrier simultaneously using the first and second beams (12, 14).
3. An optical head according to claim 1 or 2, wherein the movable optical element (16) is adapted to be rotated (18) about the optical path to obtain various configuration states.
4. An optical head according to any preceding claim, wherein said movable optical element (16) comprises a polarization dependent optical element.
5. Apparatus according to claim 4, wherein the movable optical element (16) comprises a Wollaston prism.
6. An optical head according to claim 4 or 5, wherein the first beam (12) is substantially orthogonally polarized with respect to the second beam (14).

7. An optical head according to any preceding claim, comprising a birefringent lens element (10) for producing a different depth within the record carrier at which the first and second beams (12, 14) are focused.

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8. An optical head according to claim 7, wherein the birefringent lens element (10) includes a liquid crystal material.

9. An optical head according to any preceding claim, comprising a detection system (28) for detecting a separate information signal in each of said first and second beams (12, 14) after scanning of the record carrier thereby.

10. An optical head according to claim 9, comprising an optical system adapted such that said first and second beams (12, 14), after having been scanned by the record carrier, follow a common optical path at least part of the way towards said detection system (28).

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11. An optical head according to claim 10, wherein the common optical path includes the movable optical element (16).

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12. An optical head according to claim 10 or 11, wherein the common optical path includes the birefringent lens element (10).

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13. An optical head according to any of claims 9 to 12, comprising a beam splitter (26) for separately directing said first and second beams (12, 14) towards different paths of said detection system (28).

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14. An optical head according to any of claims 9 to 13, wherein said detection system (28) is arranged to generate a signal which is arranged to vary the configuration of the movable optical element (16), the signal varying the transverse spacing between the first and second focal points (A, B).

15. An optical scanning device comprising an optical head according to any of the preceding claims.